Abstract:

Parkinson's disease is one of the incurable and not fully understood disease. This disease is developing due to the loss of dopaminergic neurons in the basal ganglia. Dopamine in the basal ganglia indirectly affects motor functions and transcriptional-translational loops of clock genes. Parkinson's disease is accompanied by motor and non-motor symptoms. Non-motor symptoms include, for example, circadian and sleep disorders. Circadian abnormalities are associated with a decrease of the melatonin levels and expression of the *BMAL1* and *Per1* clock genes at night. Sleep disorders are connected with abnormalities in NREM and REM sleep. Disruptions of the deepest stage of NREM sleep lead to the progression of motor function disorders. During REM sleep occurs a disease associated with the loss of muscular atonia, which is typical for REM sleep. This disease is called REM sleep behaviour disorder, and in many studies, it is referred to as the prodromal stage of Parkinson's disease. A drug called L-DOPA reduces the motor symptoms of Parkinson’s disease, but its administration is associated with unwanted side effects. The beneficial effect also has light therapy, which is free of side effects. REM sleep behaviour disorder is treated with clonazepam, but melatonin could be more appropriate substitute, because it can restore muscle atonia during the REM phase.